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ABSTRACT

The purpose of this study was to determine the reliability with which youngsters' contacts with law enforcement agencies could be predicted over an eight year period, to determine the significant predictors, and to develop a practical system for early prediction of delinquency and early identification of its causes. A special nomination instrument was prepared and submitted to all the teachers of Grades three, six, and nine throughout an entire county in Wisconsin. This instrument was used to select a representative sample according to classroom behavior, grade level, home location, and sex. Some results are as follows: persistent aggressive-disruptive classroom behavior clearly heralds the onset of delinquent behavior, sex and home location (urban or rural) are both significant predictors of delinquency, and IQ was also found to be a predictor of delinquency, delinquents being significantly lower than other youngsters in intelligence. It was suggested that the results of this research be used to predict future contacts of individual youngsters with law-enforcement agencies. (BW/Author)

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Prediction Of Youth Contacts With Law Enforcement Agencies Over An Eight Year Period

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Schools, parents, youth agencies, police and the courts continue to be concerned about the problem of youth crime in spite of recent increased expenditures by the Federal Government and states for crime and delinquency prevention programs. In many areas the incidence and severity of juvenile crime continue to grow. Prediction of delinquency is also a concern of many delinquency researchers (Briggs and Wirt, 1965), but there is also much concern about the dangers of delinquency prediction.

The purposes of this research were to determine the reliability with which youngsters' contacts with law enforcement agencies could be predicted over an eight year period, to determine the significant predictors, and to develop a practical system for early prediction of delinquency and early identification of its causes.

Review of Research

A large amount of research on delinquency has been carried on in recent years, but the amount of prediction and longitudinal research remains small. A classic prediction and longitudinal study is that carried out over a ten-year period by the New York City Youth Board

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(Craig and Philip, 1965). They reported that 85% of the children who were predicted to become delinquent did become delinquent. Based on further studies of the Youth Board data, Glueck (1966) reported that a three-factor table produced predictions which were 90% accurate. More recently Veverka (1969) reported on a study in Czechoslovakia using the Glueck prediction tables which confirmed their predictive validity in that quite different culture.

McDonald (1965) reviewed the work of the Gluecks and the work reported by Craig and Philip and offered a number of criticisms. She concluded that the results were not as positive as indicated by Craig and Philip, that the manual which they published was premature, and that greater safeguards are needed to protect children from labelling effects.

Delinquency researchers in the United States are greatly concerned about the dangers of predicting, labelling, stigmatizing and inducing a self-fulfilling prophecy in the predelinquent (Duncan, 1969; Harris, 1966). The criticism of delinquency prediction would be particularly potent if the predictions are relatively inaccurate and if those who use the predictions in remedial or preventive programs are careless in the use of labels or susceptible to bias as a result of the prediction.

The power of labelling and self-fulfilling prophesy must also be evaluated against the potential power of the treatment to prevent the emergence of delinquency. Berleman and Steinburn (1969) recently reviewed the results of five major delinquency prevention programs and concluded that all were failures. Thus, it would seem that caution is in order. However, it should also be noted that at least one study of labelling effects (Rosenthal and Jacobson, 1968) has been quite thoroughly discredited (Snow and Elashoff, 1972).

The criterion in delinquency prediction research is also a problem. One line of research has been concerned with self reported as opposed to officially adjudicated delinquency. Erickson (1971) reported that the correlation between official records and self reports may be quite low. He concluded that the official records might be quite biased and should be used with much caution. Gould (1969) examined the relationship of traditional delinquency predictors with three delinquency criteria and concluded that delinquency researchers should recognize three types of delinquency criteria: (1) official records, (2) self reported delinquency, and (3) descriptions of specific delinquent acts. While a full understanding of delinquency in its cultural setting can probably only be achieved through investigation of a variety of criteria and predictors, it seems likely nevertheless that from a practical point of view, officially recorded delinquency constitutes the most serious problem as perceived by society.

Another line of concern with the criterion is the issue of severity. Sellin and Wolfgang (1964) proposed a method of scaling the various kinds of officially classified crimes which might appear in a juvenile's record on the basis of perceived seriousness in the community. Grouping all delinquent acts together as equal in severity, they argued, is untenable. Rose (1966) later criticized the method because there was so much disagreement among raters of the seriousness of crimes. In effect the argument is that the level of disagreement regarding the criterion precludes reporting a central tendency. Later Akman and Normandeau (1968) reported further work in Canada with the approach pioneered by Sellin and Wolfgang. They concluded that the weighting of seriousness could be used as a valuable supplement to the usual crime statistics.

In the present study, scaling of delinquency was limited to contact or no contact with law-enforcement agencies. While descriptive data was secured on the types of crimes committed, the relatively small sample precluded further analyses with subcategories according to type or seriouness of crime. However, less serious offenses such as minor parking and driving violations were excluded from the criterion.

Turning from the criterion problem to predictors, one finds a great deal of research in which delinquency variables are investigated in univariate or multivariate analyses. What are the promising predictors: The Kvaraceus Delinquency Proneness Scale (1950) and the Glueck Prediction Tables (Glueck & Glueck, 1959) have been used in much research. Accordingly they were included in the present research. Projective instruments have also been used successfully in some prediction research (Suinn & Oskamp, 1969). Thus, a story completion form (Feldhusen, Thurston and Benning, 1971) and a sentence completion form (Feldhusen, Thurston and Benning, 1966) were used.

Socioeconomic variables have been used in much delinquency prediction research (Kvaraceus, 1966; Glaser, 1965). Although their predictive value might depend on the overall characteristics of the population studied, it was decided in this research to use measures of the educational and occupational levels of the parent as socioeconomic predictors. Parental child-rearing practices have also been studied extensively and used as delinquency predictors (Glueck and Glueck, 1959; Peterson & Becker, 1965; Blackham, 1967). A number of parent interview items derived from scales used in the Flint Youth Study (1959) were included as predictor variables in this research.

Behavior and achievement in school have also been studied extensively as correlates and predictors of delinquency (Eichhorn, 1965; Gold, 1970; Ahlstrom & Havighurst, 1971; Kvaraceus, 1966). A number of measures of intelligence, school achievement, social adjustment in school and classroom behavior were used as predictor variables. Sex differences (Cockburn & Maclay, 1965) and home location variables (Slatin, 1969) have also been investigated in recent delinquency research. Since the sample to be used in the present research was drawn to assure substantial urban and rural representation and male-female representation, both of these variables were included in the investigation.

Procedures

A special nomination instrument was prepared and submitted to all the teachers of grades three, six, and nine throughout an entire county in Wisconsin. Each teacher was asked to identify the two boys and two girls in his class whose classroom behavior was most anti-social, agressive or disruptive and the two boys and two girls whose behavior was most socially approved. The teacher was also required to check on a list of eighteen aggressive and disruptive anti-social behaviors those which were displayed habitually or persistently in school by each child he nominated. This list included nine behaviors considered to be low aggressive in character and nine which were high aggressive. Short-term (the same teacher one month later) and long-term (a new teacher the next year) reliabilities of the nomination procedures were assessed and found acceptable.

A total of 960 youngsters was nominated as displaying socially approved behavior and 590 as displaying anti-social, aggressive or disruptive behavior. From this pool of 1550 youngsters, a sample of 384 was drawn randomly for intensive study during the period of 1961 and 1962. They were selected

so as to insure equal representation according to classroom behavior; grade level as three, six, or nine; home location as urban or rural; and sex. Each of the youngsters and their parents were interviewed by a trained social worker; and three psychological tests-- the Kvaraceus Delinquency Proneness Scale; a set of story frustration exercises similar to the Rosenzweig Picture Frustration Study; and a specially constructed sentence completion form -- were administered to each child individually. Each family was rated for the pattern of interaction using the Glueck social factors and other interaction items derived from the Flint Youth Study. Data on academic achievement and intelligence were secured from school records. Complete data for the present study was secured for 304 of the original 384 subjects. Analyses were conducted in which the attrition sample were compared with the remaining sample on all predictors for which complete data was available. The results indicated that they did not differ significantly.

In addition to the 304 Ss who had been studied intensively, data on 8 of the 21 variables was available for 994 Ss who had been nominated in 1961 or 1962 but not studied intensively. These Ss were pooled with the Ss who had been studied intensively to create a total sample of 1298.

The criterion to be predicted was contact with law enforcement agencies over a period of eight years after the original nomination. Police and sheriff departments checked their records against the list of 304 youngsters who had been studied intensively and the 994 nominees and identified those who had had one or more contacts for offenses other than traffic violations.

The sample were identified over a two year period, 150 intensives the first year, 154 intensives the second year. The combined samples of intensives and nominees included 632 first year Ss and 666 second year Ss.

The first year samples were used in a stepwise multiple discriminant function analysis with a CDC 6500 computer with the predictor variables. The 21 variables are listed in Figure 1. The eight variables used in the analysis of the combined sample are marked with an asterisk. The second year samples were used in cross-validations of the functions (Cooley and Lohnes, 1971; Dixon, 1968).

Results

The results of the discriminant function analyses are presented in Table 1. The F value for the analysis of the intensive sample was 9.35 (8, 141 df) which was significant at the .001 level. A total of 111 Ss had no contacts with law-enforcement agencies, 39 had had contact. For the sample used in the analysis the functions predicted 31 of the 39 Ss in the contact group correctly and 88 of the no-contact group correctly. Overall this results in 76% accuracy of prediction and 79% accuracy in the law-contact group.

Of course, the crucial test of the functions is to apply them to a new sample. There were 154 Ss in the cross-validation sample. Of the 46 Ss who had had contact 34 were correctly predicted, and 79 of the 108 no-contact Ss were predicted correctly. This yielded a cross-validation accuracy of 73% for the contacts and no contacts and 74% accuracy in the contact group alone.

The step-wise discriminant function program stops the analysis when the addition of another variable to the functions would not increase the predictive accuracy significantly. The significant predictors in the functions were grade level when first nominated, sex, home location, chronological age as of November 1 in the year nominated, high and low

aggressive traits scores, the KD subscore for personal preferences, and the constructiveness of the mother's use of her spare time (a response to an interview item).

The discriminant function analysis for the total sample which included the Ss who were studied intensively and used in the analysis above and the children who were nominated but not studied intensively is also reported in Table 1. Only eight predictor variables were used in these analyses. The F value for the discriminant function analysis was 26.27 (6, 625 df) which was significant at the .001 level. The functions, when turned back upon the first year sample, were 71% accurate for contacts and no contacts and 74% accurate for the contact group alone. For the cross-validation sample the samples were 69% accurate in prediction of contacts and no contacts and 75% accurate in the contact group alone.

Six of the eight variables were significant predictors. They were sex, behavior as aggressive-disruptive or socially approved when first nominated, home location, chronological age, low aggressive behavior traits when nominated, and IQ.

Additional descriptive data on the total sample of 1298 was calculated. It was found that 32% had had contact with law enforcement agencies; 46% of the boys and 15% of the girls had contact; and 38% of the urban youth and 22% of the rural youth had contact. Since the original nominations were made cross sectionally in grades three, six, and nine all Ss had equal time to have or not have contact over the eight year period, but presumably the younger Ss would always be behind in amount of contact. At the point of criterion data gathering eight years after nomination, 20% of the original third graders had contact, 39% of the sixth graders, and 37% of the ninth graders.

Discussion

The first purpose of this research was to determine the reliability with which youngsters' contacts with law enforcement agencies for crimes more serious than minor traffic offenses could be predicted over an eight year period. With an original sample of 304 children who were studied intensively and for whom 21 predictor variables were available, a cross-validated accuracy of 74% was achieved. Since the base rate of law contact was 30% in this sample, predicting all of the sample to have law contact would yield 30% accuracy. Obviously the use of discriminant functions improved upon this considerably.

In the larger sample of 1298 youngsters for whom only eight predictors were available, predictive accuracy in the cross-validation sample was 75%. In this sample the base rate of law contact was 25%.

It should be noted that in the population from which the samples were drawn the base rates are slightly below the base rates in these samples. The original nomination procedure which drew large numbers of aggressive-disruptive youngsters into the sample, predisposed the sample to have a larger delinquency rate because of the link between such school behavior and eventual delinquency.

Significant Predictors. The second purpose of this research was to determine the significant predictors of delinquency. Knowledge of these predictors could in turn be used as a tentative basis for designing remedial and prevention programs.

The appearance of behavior and high and low aggressive behavior traits at time of nomination as significant predictors is consistent with all previous finding in this longitudinal research (Feldhusen, Thurston, & Benning, 1971). Persistent aggressive-disruptive classroom behavior clearly heralds the onset of delinquent behavior.

The fact that grade level and chronological age are significant predictors is partly artifactual. Obviously the original third grade sample would have been behind the original sixth and ninth graders in the emergence of delinquent behavior. They have had a longer mature life span in which to engage in delinquency and the results confirmed this. Thus, these variables might be regarded as useful predictors only in samples drawn the same way across three separated grade levels (3, 6, and 9) as in the current project.

Sex and home location as urban or rural are both significant predictors because of differential rates of law contact in the subpopulations. Boys have much higher rates of law contact than girls, and urban youngsters more than rural. Thus, the results for predictive accuracy are again limited in generalizability to samples in which boys and girls and urban and rural youth are about equally represented.

IQ is, of course, a reliable predictor of delinquency. Thus, its appearance as a significant predictor in this research is not surprising. Predelinquents and delinquents are significantly lower than other youngsters in intelligence. The link of this deficit to school failure is also well established.

One interview item came through as a significant predictor. This was a rating by an interviewer of the child's mother's use of her spare time along a dimension of constructiveness. Children whose mothers used their spare time in constructive activities such as reading and community projects were less likely to have later law contact than those whose mothers watched TV or rested.

Practical Implications. An additional purpose of this research was to develop a practical system for early prediction of delinquency and early identification of important causes. The discriminant functions developed from this research can be put to immediate use. In samples drawn the same way the samples were drawn in the present research, comparable efficiency of prediction could be expected. Full details for the applications of the functions have been specified in a document which is available from the first author upon request. The functions can be utilized without further use of a computer. A desk calculator would be sufficient to perform the arithmetic operations involved.

The equations developed in this research could be used in other settings with comparable populations, but it would be preferable to develop new equations through a local research program. This would provide the dual benefits of more locally accurate prediction and local identification of the causes or underlying conditions. The predictor variables used in the present research afford an excellent starting base for prediction studies.

The results of this research can be used to predict future contact with law-enforcement agencies for individual children. In the hands of properly trained professionals, and with adequate attention to the problems of labelling, such predictions would seem to be the appropriate starting points for designing individual delinquency prevention programs. Labels such as "predelinquent" should be avoided. Instead, the specific needs of the youngster should be specified and the youngster simply identified as one who needs professional help. Cooperation between the school and youth agencies should make such arrangements workable.

From previous research on a large number of correlates of aggressive-disruptive behavior (Feldhusen, Thurston, & Benning, 1971), from the results and experience of other delinquency researchers, and from the results of the present research, tentative guidelines and procedures for the development of delinquency prevention programs can be established.

First, attention must be directed to the child's aggressive-disruptive classroom behavior. New work in the area of behavior modification seems extremely promising in helping the aggressive-disruptive youngster develop socially acceptable behavior and productive learning activities. Closely related are the child's achievement and intelligence deficits. Special remedial assistance to help the youngster with basic deficiencies in reading, language, and mathematics skills seems essential. Furthermore the lower IQ of the aggressive-disruptive child probably means that the teacher must individualize his instruction and provide more concrete and practical instructional experiences.

The numerous family problems likely to beset the predelinquent youngster call for family intervention. He is probably poorly supervised and given little affectionate attention. Big brother or parent surrogate programs may be needed to compensate for the failures of the mother and father. The parents also seem to lack skill in creating a cohesive family unit and utilizing community resources. Thus, parent education programs and family guidance and supervision may be other promising ways to approach the problem.

Health problems beset some predelinquent youngsters and should be dealt with by appropriate community agencies. Special attention should be given to those problems which might cause special frustrations for the child in school such as vision or hearing problems.

The overall problem might be viewed as identifying those sources of frustration, failure and misdirection in the youngster's life which prevent him from attaining normal school, peer, and familial relationships and which cause frustrations which lead to maladaptive behavior.

Figure 1

Predictor Variables

1.* Grade level as 3, 6, and 9 when nominated.

2.* Sex.

3.* Behavior as aggressive-disruptive or socially approved.

4.* Home location as urban or rural.

5.* Chronological age.

6.* High aggressive behavior traits.

7.* Low aggressive behavior traits.

8. Glueck scale five factor score.

9. Story completion frustration exercises.

10. Sentence completion.

11. Kvaraceus Delinquency (KD) Proneness Scale score.

12. KD subscore for items related to school.

13. KD subscore for items related to peers and recreation.

14. KD subscore for items related to personal preferences.

15. Reading achievement (Stanford Achievement Test).

16. Arithmetic achievement (Stanford Achievement Test).

17.* IQ (the Kuhlmann-Anderson Test).

18. Interview item: Mother's approval of child's behavior.

19. Interview item: Mother's reactions to misbehavior.

20. Interview item: Mother's use of spare time.

21. Interview item: Mother's view of bad influences on her child.

* Data available for all 1298 Ss.

Table 1

Discriminant Analysis for Predicting Law Contacts

Group	Significant Predictors	F	Derivation Classification				Cross Validation Classification			
				Predicted				Predicted		
Intensives	1 2 4 5 6 7 14 20	9.35* (8, 141)	Observed	No contacts	Contacts	Total	Observed	No contacts	Contacts	Total
			No contacts	88	23	111	No contacts	79	29	108
			Contacts	8	31	39	Contacts	12	34	46
						76%[1]				73%
						(79%)[2]				(74%)
Total Group[1]	2 3 4 5 7 17	26.27* (6, 625)		Predicted				Predicted		
			Observed	No contacts	Contacts	Total	Observed	No contacts	Contacts	Total
			No contacts	301	133	434	No contacts	294	153	447
			Contacts	51	147	198	Contacts	55	164	219
						71%				69%
						(74%)				(75%)

1. This is the percentage of accuracy of classification for the total group of Ss.
2. This is the percentage of accuracy in the law-contact group.
* Significant at the .001 level.

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